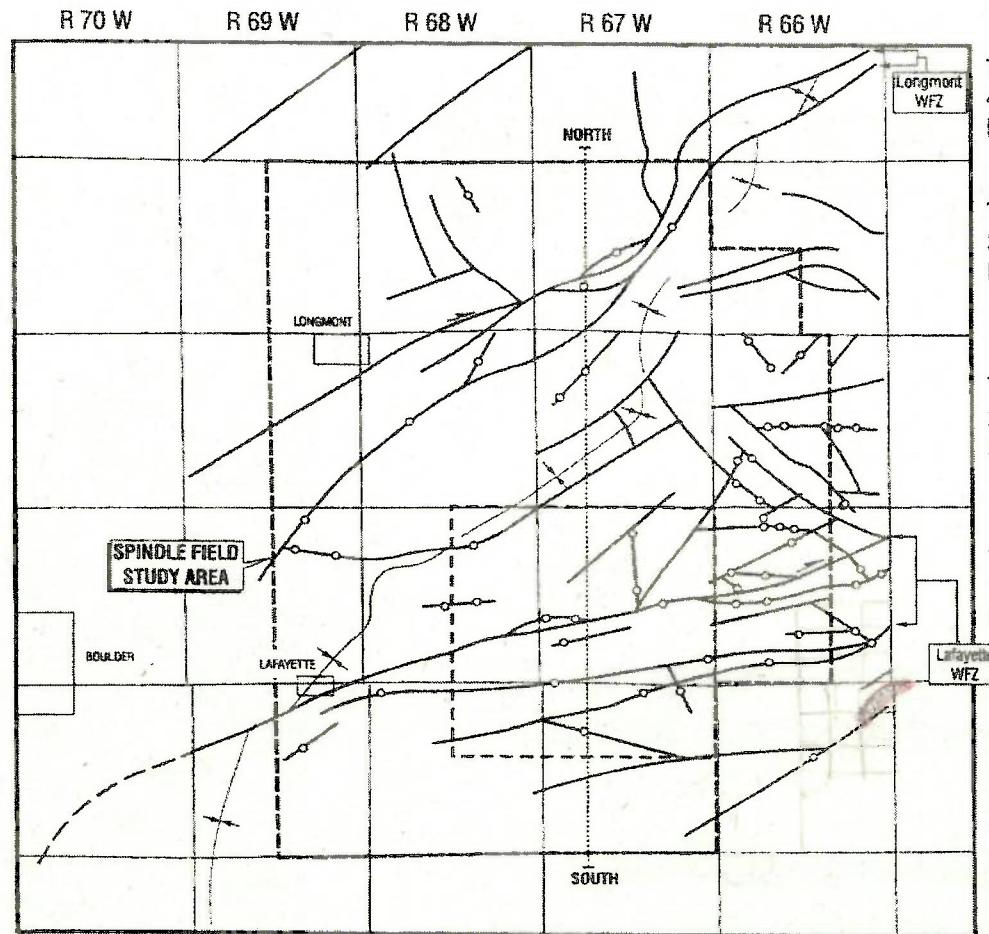


## Fault Zone Map of Deep Western DJ Basin

Faulting is at J Sand level and dies out at the base of the Pierre Shale

Figure 33 Structure contour map and wrench fault zones in central Denver basin with synthetic and antithetic faults and/or associated drape folds in the Wattenberg gas field and adjacent area. Fault patterns in Denver Basin areas are mapped by structure contouring on top of Muddy (J) Sandstone, and by identifying faults cutting the Fort Hays, Benton and Muddy (J) intervals. Fault patterns in Front Range from Tweto, 1979. Faults are near vertical to vertical and basement related. Arrows indicate direction of wrench movement. Contours x 100 represent subsea depths to top of Muddy (J) Sandstone

# Fault Pattern at J Sandstone in Spindle Field



R.J. WEIMER, 11/95

Figure Fault pattern at Muddy (J) Sandstone level from Figure 33 for Spindle field study area. Circles indicate wells in which normal faults cut either the Fort Hays Limestone, Benton Group or the Muddy (J) Sandstone (Figure 26). Synclinal axis of Denver Basin is offset and/or deflected by faulting as shown. These fault patterns may have minor variations from patterns determined by structure contouring on Figure 33.

## Structure Map on Terry Sandstone

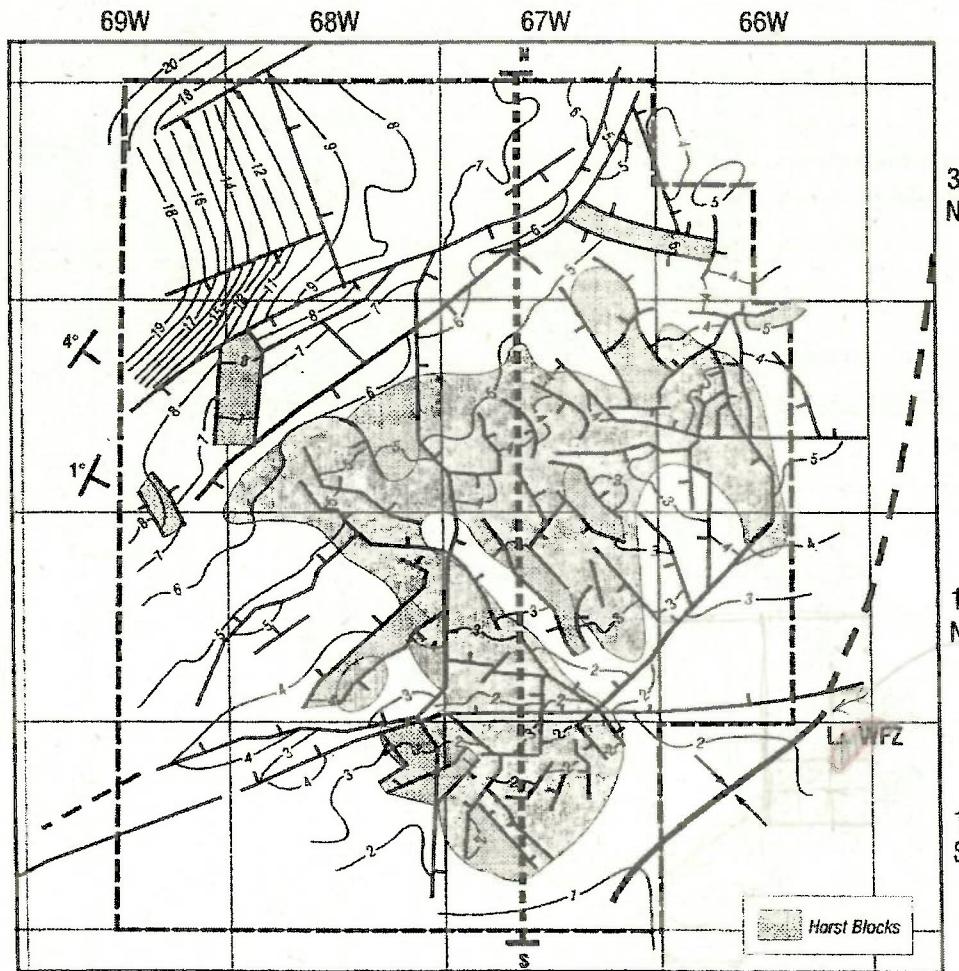


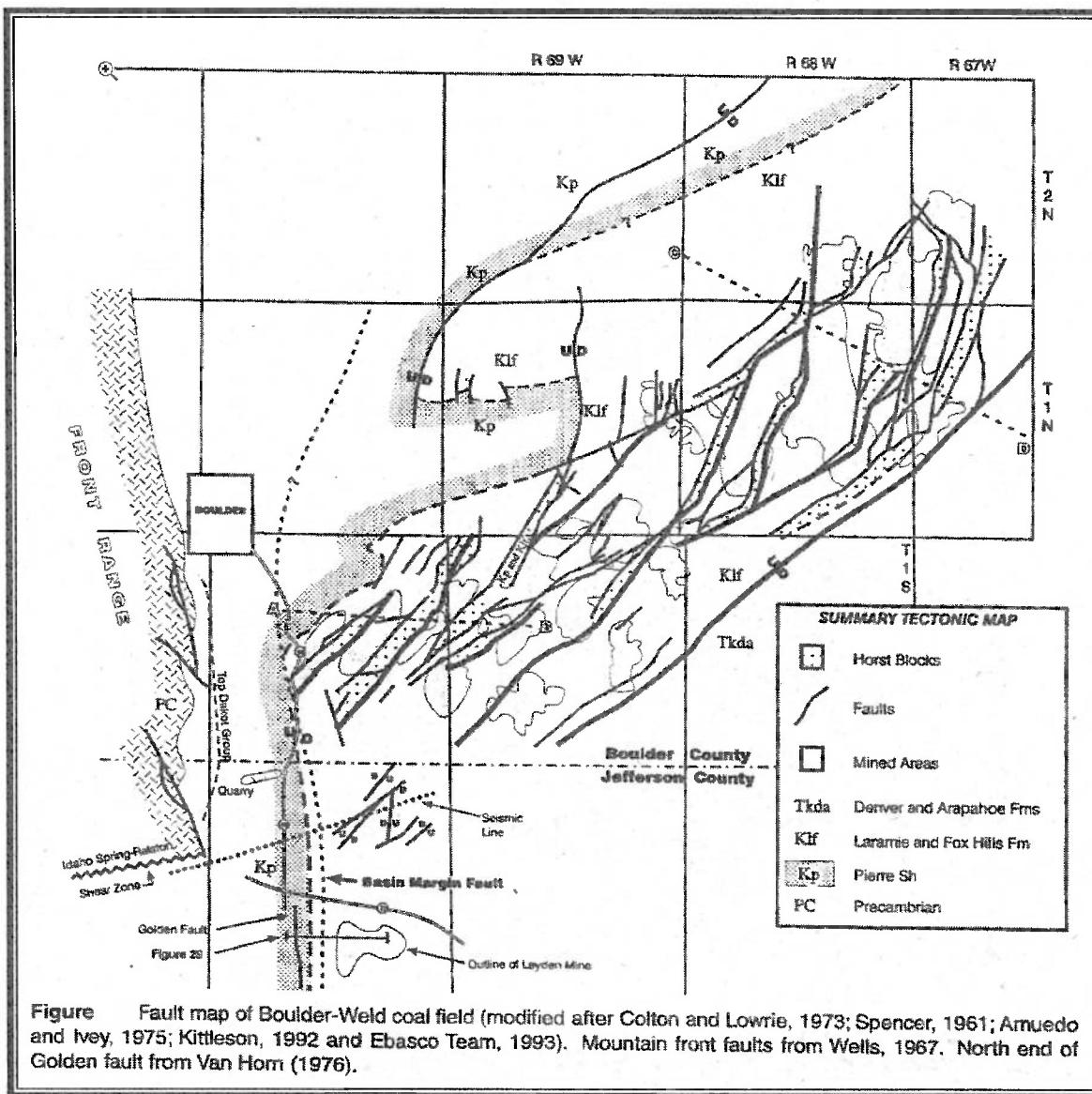
Figure Structure contour map on top of Terry Sandstone with horst-graben fault interpretations. Contours  $\times$  100 represent above sea level elevations on top of Terry Sandstone. Contour interval is 100 ft (30.5 m). Stippled pattern = horst blocks. Hatchures on downthrown side of faults.

sand member in  
Pierce shale

Syndrome - downward fold  
ECCV SITE  
just over 1 mile from ECCV  
to La WFZ

unclear what this means?  
can do what ever you want

# Fault Map of Boulder-Weld Coal Field



# Dakota Hydrodynamics – DJ Basin

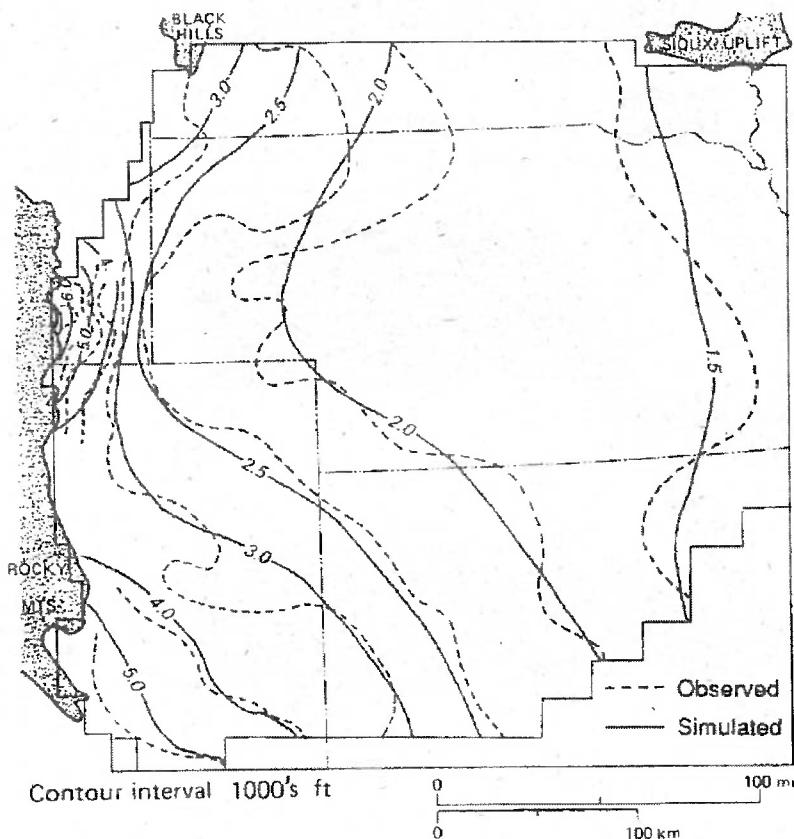


Figure —Map of simulated potential for Dakota Sandstone as an isolated artesian aquifer. Location on Figure 1.

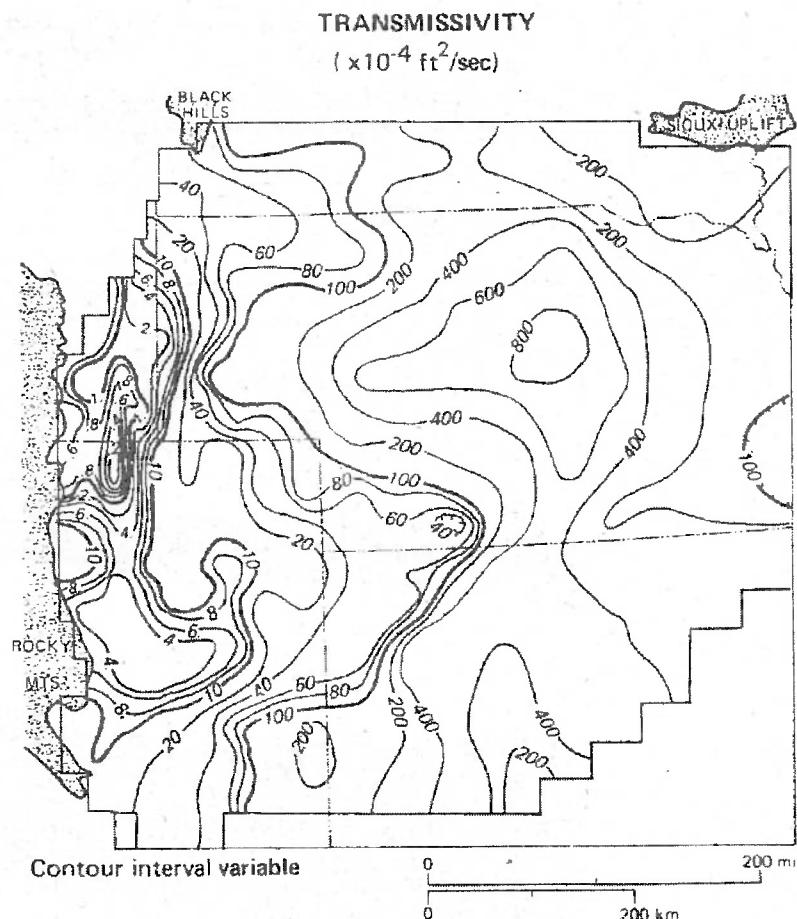
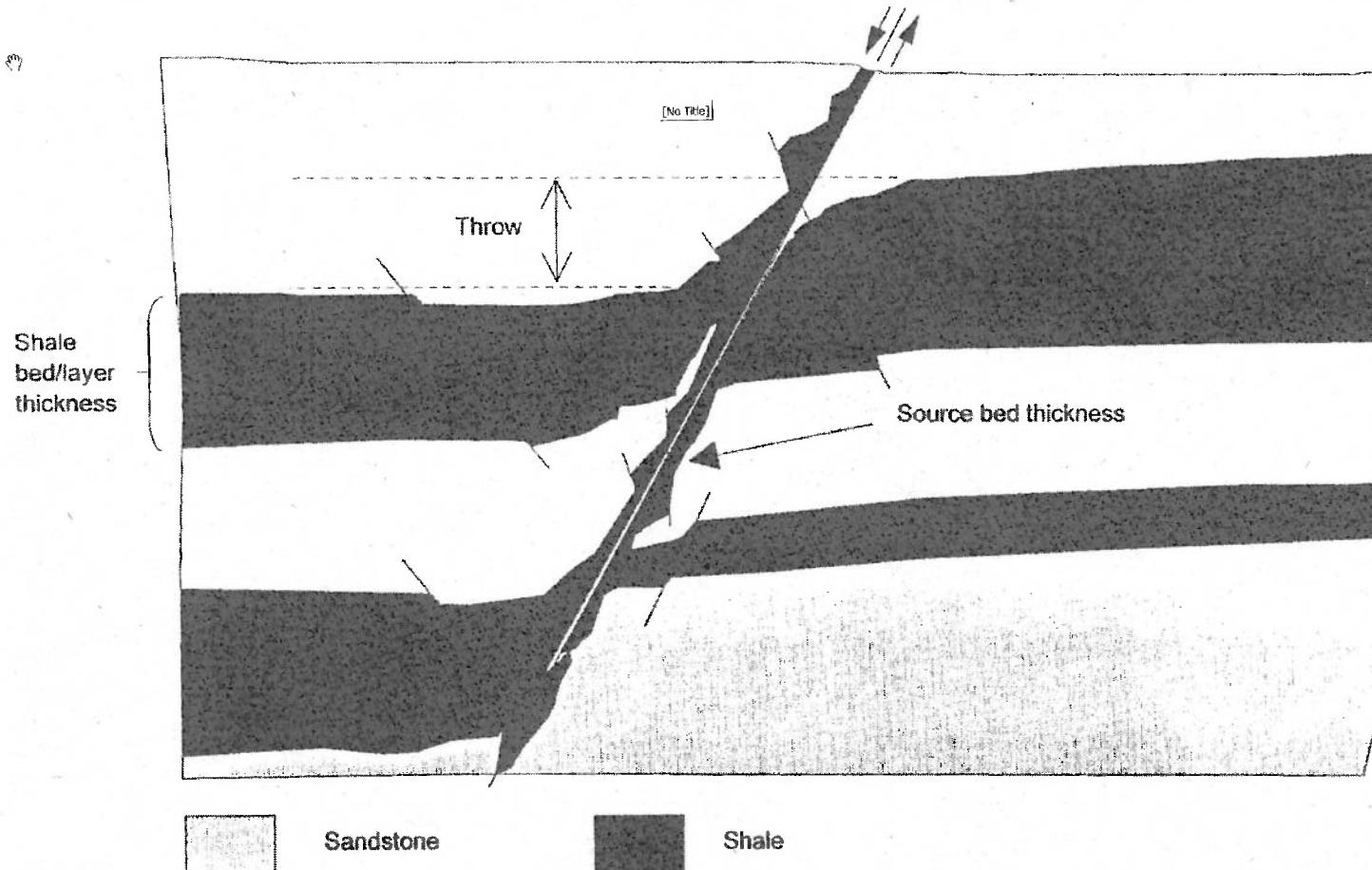


Figure —Map of transmissivity for Dakota and basal Cretaceous unit. Location on Figure 1.

(Belitz & Bredehoeft 1988)

# Fault Gouge Development Along Normal Fault

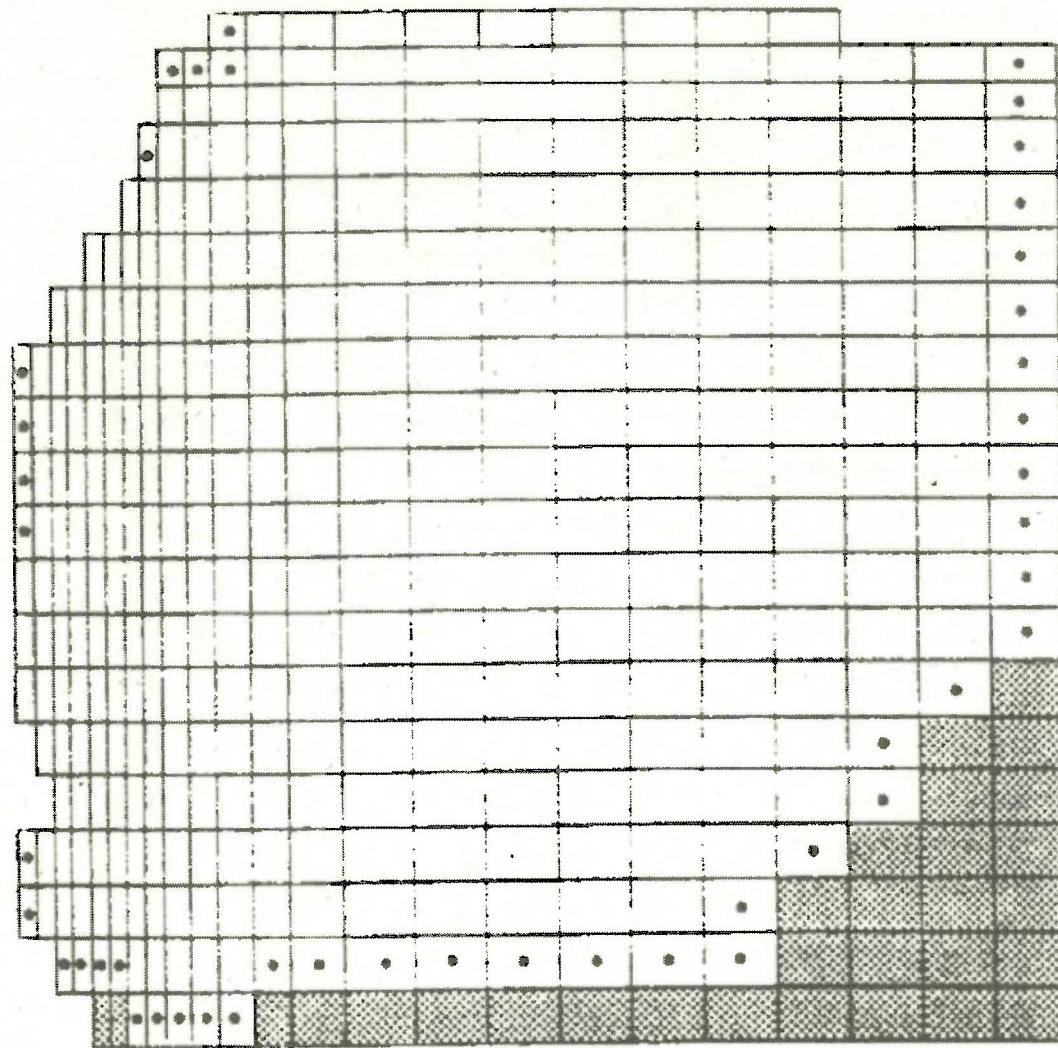


**PARAMETERS AFFECTING CLAY SMEAR, modified from  
Yielding, et al (1997)**

Fig

Birmingham 1998

## DAKOTA AND BASAL CRETACEOUS SANDSTONES UNIT



## Location of Constant Head Nodes

(After Belitz and  
Bredehoeft 1988)

- = CONSTANT HEAD NODE
- = UNIT NOT PRESENT

Figure - Configuration  
of Finite-Difference  
Model showing constant  
head (recharge –  
discharge) nodes.

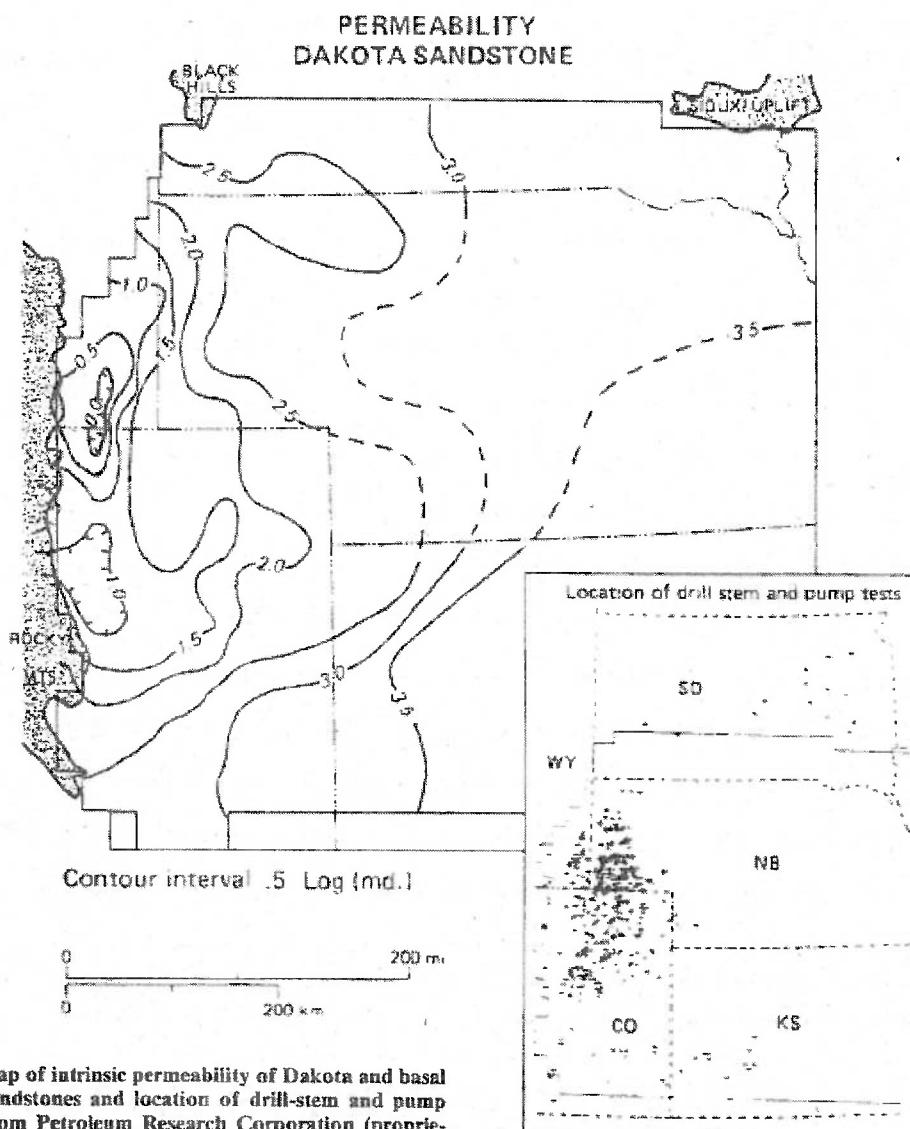
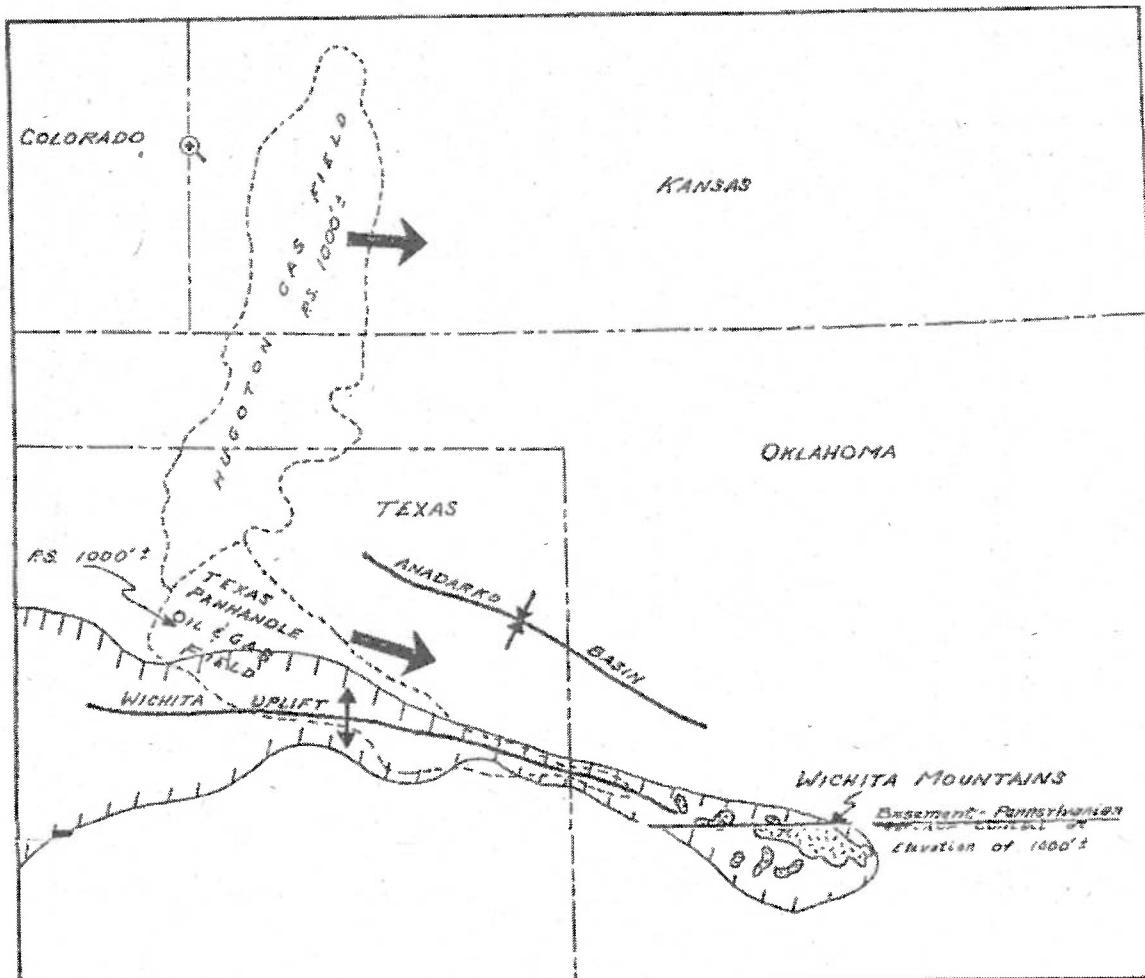


Figure —Map of intrinsic permeability of Dakota and basal Cretaceous sandstones and location of drill-stem and pump tests. Data from Petroleum Research Corporation (proprietary), Fauer et al (1964), Wilson (1965), Miller and Rahn (1974), J. P. Gries et al (1976), Jenkins and Pabst (1977), Lohmeyer and Weakly (1979), Crouch et al (1982), Bredehoeft et al (1983), and Dealy et al (1984). Map based on a total of 502 data points. Location on Figure 1.

## Map of Intrinsic Permeability of Dakota and Basal Cretaceous Sandstones

(Belitz & Bredehoeft 1988)

# Hydrodynamic Flow in Western Anadarko Basin Potentiometric surface elevation – Hugoton-Panhandle Fields



Hydrodynamics of  
Precambrian Rocks  
of the Great Plains  
and Northern  
Midcontinent Weber  
& Land, Jr. (1968)

HUGOTON AND TEXAS PANHANDLE GAS AND OIL FIELDS

Legend:

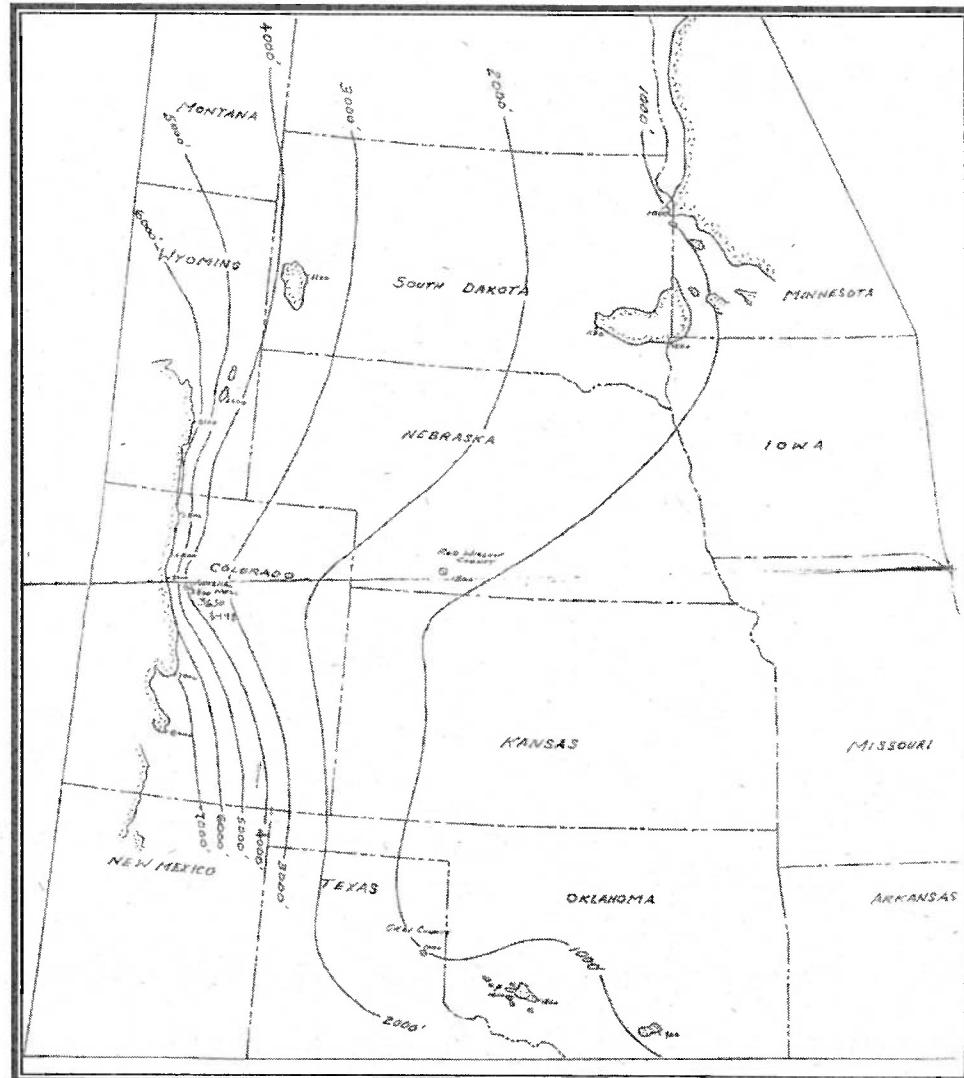
- Hatched area: AREA WHERE PRECAMBRIAN ROCKS DIRECTLY ON BASEMENT
- Dashed oval: OUTCROP OR BASEMENT ROCKS
- Thick black arrow: DIRECTION OF TILT OF GAS-WATER OR OIL-WATER CONTACT

P.S. 1000' = POTENTIOMETRIC SURFACE ELEVATION

Scale: 0 10 20 30 miles

Fig

# Precambrian Potentiometric Surface Map – U.S. Mid Continent



Hydrodynamics of  
Precambrian Rocks  
of the Great Plains  
and Northern  
Midcontinent Weber  
& Land, Jr. (1968)

PRECAMBRIAN POTENTIOMETRIC SURFACE MAP

From Dugdale, L. L., 1968.  
© 1968 Society of Economic Geologists, Inc.  
Contour Interval = 1000'

Fig